

## TOPOGRAPHICAL SURVEYS FOR SYSTEMATICALLY REGISTRATION OF THE PROPERTY IN MISCHII TERRITORIAL ADMINISTRATIVE UNIT

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**Key words:** point, property, real estate, plan.

### ABSTRACT

*Aim of the work consisted of planimetric raising of immovable property from built and extravilan area of Mischii Commune, Dolj county. The total area of Mischii was divided into 25 cadastral sectors, including real estates of territorial administrative unit (UAT) area. Given the particularities of area of UAT Mischii was necessary planting 12 new topographical points, evidenced by concrete landmarks located in six distinct areas within the UAT. Rising network consists of 42 points that will be used in the future to work in adjacent areas or to any verifications or audits. Measurement of all properties was an advantage, whereas this could be achieved and verifying the properties with sporadically cadastral documentation.*

### INTRODUCTION

To delimit the area of interest was taken administrative-territorial limit of Mischii from Dolj Cadastre and Land Registration Office. It was necessary to identify and establish territorial-administrative boundaries of communes neighboring village Mischii respectively Murgasi, Simnicu de Sus and Ghercești commune from Dolj County and Vulpeni commune in Olt County. Boundary delimitation work will be done in compliance with technical standards for the introduction of general survey approved by Order no. 534 of 01.10.2001 of the Ministry of Public Administration published in Official Gazette no. 744 of 21.11.2001.

After the measurements, revealed the existence of differences in the cadastre works sporadically (construction demolition, new construction raised, limit changes). For each property were collected simultaneously all data relating to constructions (number of floors, structure, building year, etc.).

By conducting surveying work in ground and identifying buildings boundaries were drawn cadastral sectors boundaries which have been incorporated into the overall cadastral plan of the Mischii commune, plan to scale 1:10000. Any corrections to the UAT limit is done only with prior approval of Dolj Cadastre and Land Registration Office. The boundaries defining cadastral sectors will not intersect the limits of the property.

In establishing cadastral sectors were used: UAT limits provided by Dolj Cadastre and Land Registration Office, orthophotomap, topographic/cadastral plans scale 1:2000, 1:5000 and 1:10,000, overall cadastral plan at 1:10,000 scale, etc.. The total area of Mischii was divided into 25 cadastral sectors, including real estates of territorial administrative unit (UAT) area. Specifically the paper refers to: square 20 from intravilan of Mischii village part of the 18 cadastral sector; field 39 from Mischii village extravillan which is part of the 19 cadastral sector.

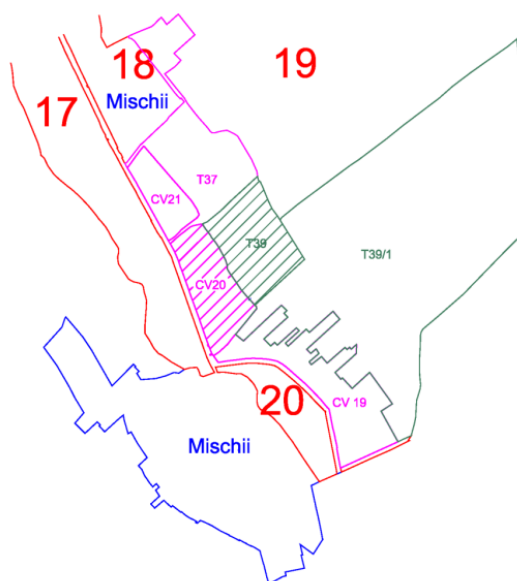


Figure 1. Work location

## MATERIALS AND METHODS

In carry out the activities of surveying for establishing properties limits was achieved a thickening and rising network of commune Mischii using GPS technology coupled with the total station measurements. For the same purpose were determined by new methods (ROMPOS) a series of points, the accuracy is reflected in the precision class specific to these types of papers.

Given that there are no plans at 1:2000 scale for the whole area of UAT Mischii was chosen GPS measurements method combined with classical measurements.

In the design work and recognition of land was intended that the points that will be included in the network, to comply a number of suitability criteria for determinations in GPS networks: points materialization to ensure stability and preservation in time, points not be marked with metal pyramids and bridges to dispose of open horizon; convenient access to points, the points position do not raise problems in their use, anytime, by any user or because the landowner on which they are located.

Given the particularities of area of UAT Mischii was necessary planting 12 new topographical points, evidenced by concrete landmarks located in six distinct areas within the UAT, which will be used both in intravilan and extravilan topographic measurements, the proportion being 60% intravilan, 40% extravilan.

For extravilan were used only 40% of new points because there are other points that are part of the national geodetic system in the UAT Mischii area, that can be used in measurements such as Drumul Batut, Ungurenii Mici, Calinești, Tabaci Vest, but also due to the use of RTK / ROMPOS technology for measurements in UAT's area. Were used the following methods: static / rapid-static and ROMPOS-RTK.

New geodetic points were determined using: two permanent stations of the national network (CRAIOVA and SLATINA) and by using of a single permanent station (CRAIOVA) and an old point from national network (MOTOCI). New determined points have been marked by concrete landmarks. They are located in areas easily accessible. New points can be used for guidance either in pairs, a pair of new points that are visible to one another, either individually using one of the new points and a point from the old network.

## RESULTS AND DISCUSSION

Following the identification of land have been measured the extravillan and intravillan of Mischii Commune. To determine the fields limits was needed measures of all elements as: exploitation roads, county roads, woods, creek Tesla, channels.

National geodetic network existing in the area was made up of two fourth-order geodetic points namely: geodetic point " Motoci Pyramid " located in the trapeze K-34-132-D-c (UAT Mischii); geodetic point "Ghercești-Ungurenii Mici" located in the trapeze L-34-132-D-d (UAT Ghercești). Likewise detail measurements made with conventional technology (electro-optic) was performed taking into account the principle of redundancy (multiple measurements than is strictly necessary), so position determining in RTK mode included two coordinate measurements in each point of detail (similar to the method of double radiation) by performing two initialization of the observations at short intervals of time (seconds, minutes).

Recording times are 5 seconds for both permanent station and new points materialized by concrete landmarks. Based on data collected were drawn parcel plans. Within the GPS network were determined absolute coordinates of 42 new points, which were materialized by planting of 42 landmarks in the field (table 1, figure 2)

*Table1*

### Coordinate inventory of determined landmarks

Landmark no.	Rectangular coordinates		Altitude (Z)
	X	Y	
B1	322718.247	407905.368	179.678
B2	323451.908	407822.913	176.839
B3	321139.983	409341.547	171.602
B4	320947.136	409169.512	171.739
B5	319275.502	410937.593	168.172
B6	319609.139	411299.618	170.646
B7	326688.842	408010.299	208.257
B8	327263.179	408682.666	221.775
B9	328519.002	410908.056	181.571
B10	328633.312	410930.291	207.029
B11	324243.134	409491.915	214.695
B12	324040.870	408768.257	215.208
⋮	⋮	⋮	⋮
V004	320416.061	410038.772	168.869



**Figure 2. Support and raising network**



**Figure 3. Traverses identification**

To make measurements for buildings from square 20, within the built-up areas of Mischii commune and 39 field from outside the built-up areas of Mischii were executed two supported traverses.

For the first traverse were gone from GPS V001 landmark, oriented on GPS V002 landmark and were closed on 5105 landmark with orientation on 5106 landmark, traverse from which were obtained the following points of station: 1, 2, 3, 4, 6, 8, 9, 10, 11, 12, 13, 14, 15, 17, 19, 20, 21, 22, 23, 24, 25, 26, 28, 30, 31, 32, 33, 34, 36, 38, 39 (Table 2, Figure 3, Figure 4).

**Table 2**

**Calculation of the traverse from V001 landmark to 5105 landmark**

Station	Target point	Orientation g.c.cc.	Distance (m)	Relative coordinates		Absolute coordinates		Pt.
				$\Delta x$	$\Delta y$	X	Y	
		138.0462						
<b>V001</b>	<b>V002</b>							
						<b>320821.422</b>	<b>409405.220</b>	<b>V001</b>
		388.8322		204.804	-36.31			
	1	-0.0027		0.042	0.026			
		388.8295	207.998	204.846	-36.284	321026.268	409368.936	1
		387.9580		96.128	-18.412			
1	2	-0.0054		0.02	0.013			
		387.9526	97.876	96.148	-18.399	321122.416	409350.537	2
		384.6518		87.419	-21.506			
2	3	-0.0081		0.018	0.015			
		384.6437	90.026	87.437	-21.491	321209.853	409329.046	3
...		...	...	...	...	...	...	...

39	5105	-0.0860		0.004	0.006			
		372.4142	22.532	20.454	-9.455	<b>321831.798</b>	<b>408784.458</b>	<b>5105</b>
		368.8110						
<b>5105</b>	<b>5106</b>	-0.0887						
		368.7223						
Stations no.			33		xs-xp=	1010.376	ys-yp=	-620.762
Azimuthal error			-0.0887	cc	dx=	1010.165	dy=	-621.207
Azimuth correction per station			-0.00269	cc	difx=	-0.211	dify=	-0.445
$\Delta x$			873.3		correction % x	0.021	Correction %y	0.0716347
$\Delta y$			556.687					

From the station points 4, 15, 26, 28, 33, 34, obtained by the above mentioned traverse were calculated following radiated stations 5, 7, 16, 27, 29, 35, 37.

For the second supported traverse was departed from station 17 oriented on station 15 (stations obtained from first traverse) and was closed on 5105 landmark, oriented on 5106 landmark, after which traverse were obtained following points of station: 18, 41 42, 43 (Table 3, Figure 3, Figure 4).

Table 3

#### Calculation of the traverse from point 17 to 5105 landmark

Station	Target point	Orientation on g.c.cc.	Dist. (m)	Relative coordinates		Absolute coordinates		Point
				$\Delta x$	$\Delta y$	X	Y	
		103.1669						
<b>17</b>	<b>15</b>							
						<b>321452.413</b>	<b>408932.394</b>	<b>17</b>
		50.8323		207.484	212.951			
	<b>18</b>	-0.0045		-0.253	0.091			
		50.8278	297.318	207.231	213.042	321659.644	409145.436	<b>18</b>
		14.6828		139.201	32.666			
...	...	...	...	...	...	...	...	...
<b>43</b>	<b>5105</b>	-0.0227		-0.025	0.003			
		180.0732	22.561	-21.49	6.95	<b>321831.798</b>	<b>408784.458</b>	<b>5105</b>
		368.7496						
<b>5105</b>	<b>5106</b>	-0.0273						
		368.7223						
Stations no.			6		xs-xp=	379.385	ys-yp=	-147.94
Azimuthal error			-0.0273	cc	dx=	380.158	dy=	-148.21
Azimuth correction per station			-0.00455	cc	difx=	0.773	dify=	-0.278
$\Delta x$			634.622		Correction % x	-0.1218048	Correction %y	0.0425
$\Delta y$			653.342					

For station points obtained from the above mentioned traverses was drawn support network and surveying scheme (Figure 4). From measurements on the field and detail points calculation (Table 4) was drawn site and boundary plan for properties from 20 quad

built-up area and for the properties outside of the built-up area – 39 field (parcel plan) of Mischii village, Dolj County.

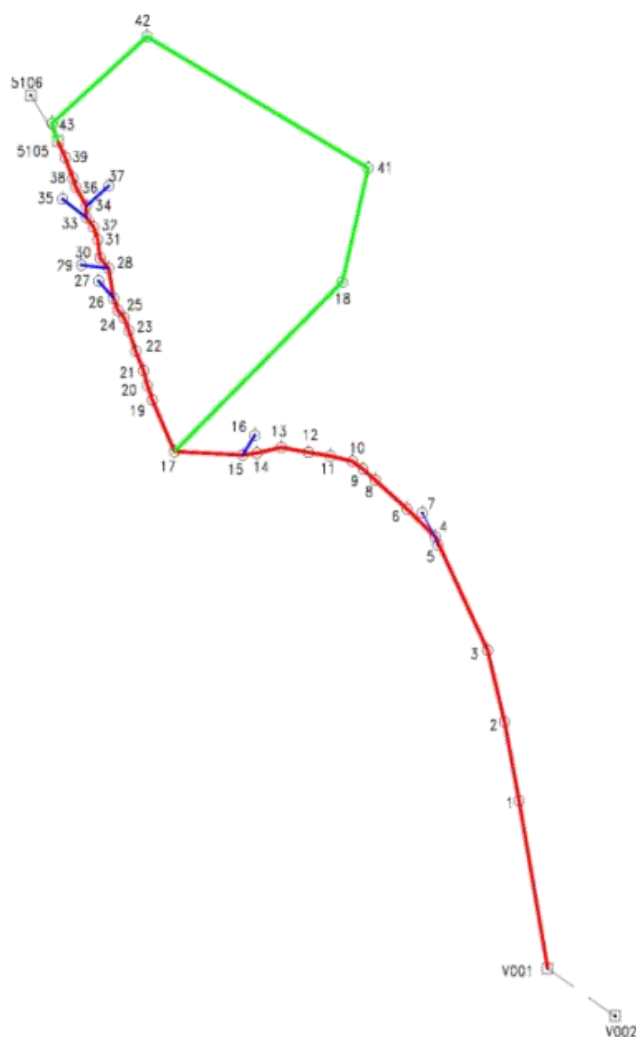


Figure 4. Drawing of the support network

Table 4

### Inventory of coordinates

Point no.	Absolute coordinates	
	X	Y
50	321770.387	408832.045
51	321771.074	408832.889
52	321768.065	408833.918
53	321768.783	408834.789
...	...	...
1047	321796.114	408848.395
1048	321795.216	408850.449

Parcel plan (Figure 5) consists of all existing parcels of unincorporated area from 39 field Mischii, their surfaces, according to land ownership and correspond to the reality on the ground, being drawn at the scale 1:1000.



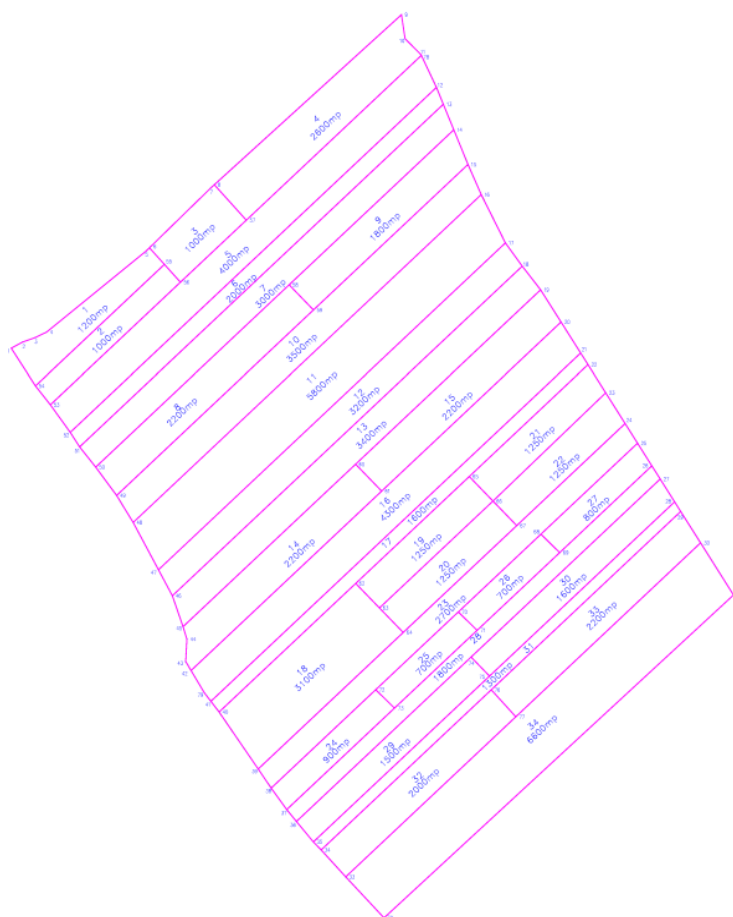


Figure 5. Parcel plan

## CONCLUSIONS

Given the particularities of area of UAT Mischii was necessary planting 12 new topographical points, evidenced by concrete landmarks located in six distinct areas within the UAT. Points of surveying network have a description and a set of coordinated in European Terrestrial Reference System ETRS89 and national SRC (Stereographic 1970). At the OCPI level will be made database to include these items. Points of surveying network will be used in the future surveying works or to any inspections or audits.

## BIBLIOGRAPHY

1. **Gânj G.**, 2009 - *Drept privat și proiecte personale-Cartea funciară*, Iași, <http://www.ganj.ro/uploads/Publicatii/cartea%20funciara.pdf>.
2. **Mihăilă M. și colab.**, 1995 - *Cadastru general și publicitate imobiliară*, Editura Ceres, București.
3. **Neuner J.**, 2000 - *Sisteme de poziționare globală*, Editura Matrix Rom, București.
4. **Păunescu C.**, 2004 - *Curs de geodezie – topografie, vol. III*, Editura Universității din București.
5. **Tamaioaga Ghe., Tamaioaga D.**, 2005- *Cadastrul general și cadastrale de specialitate*, Editura Matrix Rom, București.
6. \*\*\* *Ordinul Ministerului Administrației Publice nr. 534/2001*, publicat în Monitorul oficial nr. 744 din 21.11.2001.